Claims

This Listing of the Claims replaces all prior versions of the claims in the application.

1. (Previously Presented) A transmission system comprising:

a first (4) and a second (5) flexible link, that couple a crankshaft of a combustion engine to a shaft (1) of an alternator-starter;

a two-state coupling device, wherein a first state of the two-state coupling device corresponds to a phase for starting the engine, in which the shaft (1) of the alternator-starter (ATD) drives the crankshaft (V) of the engine (M) with a first transmission ratio, and a second state of the two-state coupling device corresponds to a phase in which the crankshaft (V) of the engine (M) drives the shaft (1) of the alternator-starter (ATD) with a second transmission ratio, and in that the first transmission ratio is higher than the second transmission ratio; and

a first (2) and a second (3) pulley coaxial with said shaft (1) of the alternator-starter (ATD), wherein, when the two-state coupling device is in the first state, the first pulley (2) is coupled to the shaft (1) of the alternator-starter (ATD) to provide the first transmission ratio and, wherein, when the coupling device is in the second state, the second pulley (3) is coupled to the shaft (1) of the alternator-starter (ATD) to provide the second transmission ratio;

wherein the two-state coupling device is arranged between the first (2) and the second (3) pulleys and includes at least one coupling element (10) that moves longitudinally parallel to the axis of the shaft (1) of the alternator-starter (ATD) between two positions corresponding to the first and second coupling device states respectively, as a function of the relative rotation speed between one of said first (2) or second (3) pulleys and the shaft (1) of the alternator-starter (ATD); and

wherein said longitudinally movable coupling element comprises a selector (10) having a helical connection (12) to the shaft (1) of the alternator-starter (ATD), having at least a lateral face (10', 10") bearing a power transmission element (15, 16), and facing a flank (2', 3') of one of the first (2) and second (3) pulleys, and a control element (11, 14, 18, 22, 22') able to move with respect to the selector (10) and generating a minimum torque that is required for the correct displacement of the selector (10) along the helical connection (12).

2. (Cancelled)

3. (Cancelled)

4. (Previously Presented) The system as claimed in claim 1, wherein the coupling device comprises a means placing the coupling device in its second state when the angular velocity ($\omega 1$) of the shaft (1) drops below the angular velocity ($\omega 3$) of the second pulley (3).

5. (Previously Presented) The system as claimed in claim 1, wherein the first pulley (2) has a diameter smaller than that of the second pulley (3).

6. (Previously Presented) The system as claimed in claim 1, wherein the first (4) and second (5) flexible links are mounted between, respectively, the first (2) and second (3) pulleys and the grooves of a pulley (30) fastened to the crankshaft (V) of the engine (M).

7. (Previously Presented) The system as claimed in claim 1, wherein the first flexible link (4) is mounted between the first pulley (2) and a first groove (23_1) of a double intermediate pulley (23) the second groove (23_2) of which receives the second flexible link (5) mounted between the second pulley (3) and a groove of a pulley (30) fastened to the crankshaft (V) of the engine (M).

8. (Previously Presented) The system as claimed in claim 7, wherein said first groove (23_1) has a diameter greater than that of said second groove (23_2).

9. (Previously Presented) The system as claimed in claim 7, wherein it comprises a tensioning element (7) arranged on a strand part of the second flexible link (5) between the intermediate pulley (23) and the second pulley (3).

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Previously Presented) The system as claimed in claim 1, wherein the selector (10) has a first lateral face (10') facing a flank (2') of the first pulley (2) and bearing a first power transmission element (15), and a second lateral face (10") bearing the control element (11), said control element (11) being able to move in translation parallel to the axis of said shaft (1) and having an end face facing towards a flank (3') of the second pulley (3) and bearing a second power transmission element (16) comprising a friction lining, and wherein the selector (10) bears at least one elastic return element (14), which exerts a pressing force on the control element (11) so that said friction lining (16) presses against said flank (3') of the second (3) pulley.

15. (Previously Presented) The system as claimed in claim 1, wherein the selector (10) has a first (10') and a second (10") lateral face facing a flank (2', 3') of the first (2) and second (3) pulleys respectively and which respectively bear power elements (15, 16), the control element (11) being able to move in longitudinal translation with respect to the selector (10) parallel to the axis of said shaft (1, 1'), the control element (11) having a lateral face (11') facing towards a flank (3') of the second pulley (3) and bearing a friction lining (18), and wherein the selector (10) bears an elastic return element (14), which exerts a pressing force on the control element (11) so that said friction lining (18) of the control element (11) presses against said flank (3') of the second pulley (3).

16. (Previously Presented) The system as claimed in claim 1, wherein the selector has a first (10') and a second (10") lateral face bearing a power transmission element (15, 16) and facing a flank (2', 3') of the first (2) and second (3) pulleys respectively, the control element (11) rotating as one with the selector (10) and for any longitudinal position of the selector, generating a torque which is dependent on the relative angular displacement between the selector (10) and at least one of the first (2) and second (3) pulleys.

17. (Previously Presented) The system as claimed in claim 16, wherein the control element (11) has an elastically deformable element (18) which, at its longitudinal ends, has deformable regions (19, 19') which are in contact with said flank (2') of the first pulley (2) and said flank (3') of the second pulley (3), respectively, at least when the selector (10) is in one longitudinal position.

18. (Previously Presented) The system as claimed in claim 16, wherein the control element (11) has, on at least one lateral face, a magnetic element (22, 22') facing a complementary magnetic element (20, 20') borne by said flank (2', 3') of one of the first (2) and second (3) pulleys.

19. (Previously Presented) The system as claimed in claim 16, wherein the selector (10) has, on two opposite lateral faces (10', 10"), a power transmission element (15, 16), one of them (15) facing a flank (2') of the first pulley (2), and the other (16) facing a flank (3') of the second pulley (3) and wherein the selector (10) has an annular magnetic element (22) arranged at its periphery and situated facing a complementary annular magnetic element (20) fastened to the second pulley (3).

20. (Previously Presented) The system as claimed in claim 16, wherein the selector (10) has a friction element (18), which is situated at its periphery and is in contact with an annular region (19") of the second pulley (3).

21. (Previously Presented) The system as claimed in claim 1, wherein the selector (10) has a first (10') and a second (10") lateral face bearing a power transmission element (15, 16) and facing a flank (2', 3') of the first (2) and second (3) pulleys respectively, the control element (11) being able to move in translation with respect to the selector (10) and having, on at least one lateral face (11', 11"), a magnetic element (22', 22") facing a complementary magnetic element (20, 20') borne by a flank (2', 3') of one of the first (2) and second (3) pulleys.

22. (Previously Presented) The system as claimed in claim 7, wherein the coupling device comprises a first and a second power transmission device that can be disengaged and that are mounted to act in opposition, the first being mounted coaxially with the first pulley (2) and the second being mounted coaxially with the double intermediate pulley (23).

23. (Previously Presented) The system as claimed in claim 22, wherein said first and second disengagable transmission devices have helical connections operating in opposite directions in order to cause said first and second devices to operate in opposite directions.

24. (Previously Presented) The system as claimed in claim 22, wherein said first and second disengagable transmission devices comprise a free wheel.

25. (Previously Presented) The system as claimed in claim 1, wherein the helical connection (12) is one of a screw thread and a helical cam path.

26. (Previously Presented) The system as claimed in claim 1, wherein the power transmission element (15, 16) is one of a friction lining and a dog.

27. (Previously Presented) The system as claimed in claim 14, wherein the elastic return element (14) is a spring.

28. (Previously Presented) The system as claimed in claim 15, wherein the elastic return element (14) is a spring.

29. (Previously Presented) The system as claimed in claim 20, wherein the friction element (18) is deformable.